



Environmental Protection (Great Barrier Reef) Protection Measures & Other Amendments Bill 2019

Submission

March 2019

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SUBMISSION

This submission refers to Parts 2 and 5 of the Bill which are most directly relevant to local governments in the Great Barrier Reef catchment and the Decision RIS which articulates the Government's policy intent underpinning the Bill.

Parts 2 and 5 of the Bill provide for:

- defining the Great Barrier Reef catchment boundary by a map prescribed by regulation;
- the setting of end of catchment load limits for dissolved inorganic nitrogen and suspended sediment for all Reef catchments.

These limits are set in the Reef 2050 Water Quality Improvement Plan 2017-2022. Limits will be prescribed in the Environmental Protection (Water Quality) Policy 2009;

- a head of power for the establishment of a Great Barrier Reef Water Quality Offset requirement for a relevant activity under an Environment Protection Policy of the *Environmental Protection Act 1994* (Section 88) through an amendment to the *Environmental Protection Regulation 2008*; and
- a definition of *residual impact* of a relevant activity to mean the release of a 'contaminant' i.e. dissolved inorganic nitrogen or suspended sediment, into water (Section 87).

The LGAQ supports the State's overall policy intent to reduce the impacts of poor water quality on the Great Barrier Reef and provides in principle support for the Bill as one of several tools required to achieve this intent.

However, the LGAQ remains opposed to the increased regulation of local governments' relevant activities, specifically sewage treatment plants (STPs).

In summary, the basis for the LGAQ's position is that it is unreasonable to propose to further regulate local government STPs to achieve a 'no net decline' outcome while there is:

1. insufficient evidence that local government STP impacts overall are significant and warrant the additional costs of increased regulation of all STPs in the Reef catchment;
2. a lack of proven, cost effective and efficient alternative solutions to expensive STP upgrades to meet a 'no net decline' requirement;
3. a lack of proven, cost effective and efficient offset options that can be used in a range of environments and climatic conditions.

The LGAQ notes the Decision RIS states the Bill provides a head of power to:

"Allow for further detailed regulations to be developed in the future, to support the use of water quality offsets for new development."

Regarding local government regulated activity, the LGAQ contends this should not occur until the above issues are properly resolved in collaboration with councils.

1. Evidence of a significant contribution to water quality decline

The LGAQ supports the position of the *qldwater directorate* that the figures regarding current (and therefore projected) local government sewage treatment plant contributions to Dissolved Inorganic Nitrogen (DIN) are inaccurate. Regardless, according to the State's figures, local government STPs still only contribute approximately 10% of the total DIN load entering the Reef lagoon each year.

2. Cost effective and efficient alternative solutions

The Decision RIS correctly points out that sufficient mechanisms already exist under the *Environmental Protection Act 1994* to 'ratchet down' allowable DIN levels in licenses when a council needs to renew their license. The LGAQ members have made numerous objections to this practice based on cost to councils and ratepayers for the very small benefit achieved to the environment. Neither the Consultation RIS nor the Decision RIS have provided sufficient evidence in the view of the LGAQ and its members to warrant this practice.

3. Proven Offset Options

The Decision RIS has removed the immediate requirement for mandatory offsets for residual impacts from point sources based on industry feedback and further analysis. There has been only one example in Queensland where an offset has been used. The lack of tested, costed viable options for a range of climatic conditions and environments, results in a significant risk to councils who under the current Voluntary Mechanism for Water Quality Offsets are subject to penalties and reinstatement costs should the offset fail.

Please refer to the *qldwater directorate* submission for further technical information in support of the above statements (Attachment 1)

Considerations

The Decision RIS maintains that a 'no net decline' to water quality in each Reef basin apply to industry point sources (i.e. local government STPs).

New prescribed ERAs and resource activities (e.g. sewage treatment, waste disposal, certain mining activities, and land-based aquaculture) will be required to meet a 'no net decline' standard regarding nutrient and sediment releases. Where these ERAs cannot avoid or mitigate their water quality impacts, they will be able to meet this standard requirement through a voluntary offset condition informed by the Point Source Water Quality Offsets Policy under the Environmental Protection Act 1994.

While on paper this seems reasonable, the on-ground options for local government currently is to either:

- invest in untried offsets that may fail and require repeated reinstatement; or
- undertake an STP upgrade using currently accepted (and expensive) technology.

The environmental regulator has the final say on the approach adopted and it is anticipated that the regulator will require the most reliable option i.e. expensive upgrades.

The LGAQ notes the change in policy position that would allow a local government to undertake an offset if modifications to an STP are more expensive than the maximum cost of an offset, the Decision RIS does not provide the formula for calculating an offset cost.

Although water quality offsets are no longer mandatory for sewage treatment plants, offset costs are still a sound indicator of the maximum possible costs that treatment plants might face when upgrading their treatment processes. These are maximum costs because if plant operators can make the changes in a cheaper manner under the proposed regulations, they will be able to do so. If changing their plant costs more than the offset amount, they will be able to choose to use offsets.

If local governments arrive at a point where they have the benefit of adequate information and options regarding either, this position will be welcome.

Recommendations:

A. That the Committee recommend that local government regulated activity be exempted from the 'no net decline' policy requirement until such time as issues associated with cost, alternative options and offset efficacy for the Reef catchment area are addressed.

Local government in the Reef catchment are already investing over \$200 million per annum in actions to benefit the Reef and are committed to further improvements as resources allow.

There is currently insufficient evidence and cost efficient and effective alternatives to reasonably justify compelling local governments to expensive upgrades to achieve a 'no net decline' for the small contribution of DIN by STPs in Reef catchment waters.

To do so under current circumstances will have negative impacts to local growth and economic opportunities.

B. That the Committee recommend the State commit to funding the Reef Councils Major Integrated Projects Initiative 1. Wastewater Stewardship to the completion of trails – and additional \$3.4 million

over 3 years - to provide the evidence required to address the issues of cost, alternative options and offset efficacy for the Reef catchment area.

Reef catchment local governments are aware of the need to improve water quality to the Great Barrier Reef receiving waters and are willing to work with each other and key stakeholders to find suitable solutions.

At the request of the Reef councils, the LGAQ facilitated the development of a Reef Councils Major Integrated Projects (MIP) proposal, developed by Reef catchment local governments in partnership with the Great Barrier Reef Marine Park Authority Reef Guardian's program and participation of key stakeholders including State Government and Regional NRM group representatives (Attachment 2).

Initiative 1 of the MIP is the Wastewater Stewardship Initiative, specifically to address the issues associated with items 1 – 3 in this submission.

The LGAQ has entered into a Grant Deed with the Department of Environment and Science, which is investing \$331,000 over 18 months to undertake the Strategic Assessment phase of the initiative. This will take participating councils and their industry and NRM partners to the point of having identified priority point source sites for water quality improvement, low risk trial sites and a suite of potentially suitable alternative solutions (including offsets).

Unfortunately, without a further funding commitment, the trials will rely solely on local government's ability to fund undertaking the trials which will reduce the number of trials undertaken and significantly slow down acquiring the knowledge needed to achieve 'no net decline' while allowing development and population growth to continue.

ATTACHMENT 1: Industry Feedback, qldwater consolidated feedback – Feedback on Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill 2019

ATTACHMENT 2: Reef Councils Major Intergrated Projects Proposal – Initiative 1: Wasterwater Stewardship

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Reef Councils Major Integrated Project Proposal



Wastewater Stewardship: Phase one

NOTE: This document is an overview of phase one of the Reef Councils Major Integrated Projects (MIP) proposal Initiative one: Wastewater Stewardship. Refer to the Reef Councils MIP document for full details of this and other initiatives, available from Dorean_Erhart@lgaq.asn.au.

Strategic Assessment

Initiative Overview

Rationale

There are nearly 120 council-owned sewerage treatment plants (STPs) in the Reef's catchments which provide essential services to protect public and environmental health. Even the most advanced STPs produce a residual nitrogen (and phosphorus) load. Nutrients (particularly nitrogen) significantly contribute to poor health of the GBR. Increased nutrient removal is usually directly linked to higher cost and greater energy use.

According to a *qldwater* discussion paper, to upgrade all remaining plants within 50km of the coast to tertiary treatment would require a \$719 million investment in new infrastructure and a further \$33 million per year for ongoing operational costs.¹ The cost for STPs in smaller councils is disproportionately higher, and with no economies of scale and a smaller rate base, they are least able to afford it. The prohibitive costs of providing STPs must also be balanced with the needs of populations and economic growth, such as tourism. There are innovative, practical and cost-effective alternatives to tertiary treatment that can be suitable, particularly for small STPs and where development requires new infrastructure.

This initiative will:

- consider STP discharge from a local and whole of catchment perspective to prioritise and manage Reef water quality impacts and identify and adopt where appropriate, innovative, pollutant mitigation approaches;
- create a rigorous framework to explore and trial innovative approaches which offer improved outcomes at less cost than traditional STP upgrades; and
- provide a decision-making structure to balance costs and risks and facilitate the delivery of the right wastewater management strategy for the location.

Objectives

- A. Establish an evidence-based prioritisation of STPs requiring upgrade according to performance and risk to water quality entering the Reef lagoon;
- B. Provide a decision-making framework for the assessment of traditional and innovative wastewater management options to identify the right approach to deliver value for money to ratepayers while meeting environmental requirements and improving water quality entering the Reef lagoon;
- C. Identify a suite of cost effective and innovative, non-traditional approaches to improving water quality impacted by STPs;
- D. Optimal mix of non-traditional and traditional approaches at priority STPs within the Reef catchment will inform future investment in sewage treatment;
- E. Build state and local government knowledge of technical and operational implementation of alternative wastewater management approaches;
- F. Explore opportunities for resource recovery and reuse and creating new resources from waste;
- G. Explore opportunities to reduce emissions and contribute to the State's emissions reduction target;
- H. Build community understanding of total water cycle management and the role of wastewater (in partnership with existing activities by NRM, industry and agriculture peak bodies); and

¹ *qldwater* (2017) Sewage treatment plants in Great Barrier Reef catchments, Industry Discussion Paper (March 2017)

- I. Allow for urban expansion in Reef catchment local government areas while minimising costs to ratepayers through the deployment of non-traditional approaches where appropriate.

Outcomes

1. Make an equitable and proportionate contribution to meeting water quality targets in key catchments.
2. Contribute to a net decrease in nutrient in catchments.
3. Evidence based knowledge and decision-making of alternative wastewater management approaches.
4. Data sharing baselines and progress monitoring processes established.
5. Increased community awareness of total water cycle management and wastewater innovation.
6. Enable Reef Councils to more cost effectively unlock opportunities for population and tourism growth.

Strategic assessment

Undertake a strategic assessment of STPs across the 32 Reef Catchment councils

This activity involves partnerships across Reef councils and the Department of Environment and Science (DES) to source data and willing research institutions to frame the assessment and prioritisation methodology. This project will be accelerated through use of data from work currently underway by *qldwater* and DES.

This project will assess STPs across the region to identify those with the highest impact to Reef water quality. Those sites most suitable for conducting innovation trials will also be selected considering suitability for acting as a surrogate for high impact STPs without increasing risk to water quality. Innovation trial sites will be rigorously assessed comparing innovative and traditional approaches to select the best options for the location, size of the STP and whole of life costs to council.

An indicative list of potential innovative approaches that may be considered for assessment and trial is included in Table 1 and presented according to the waste and resource management hierarchy.

Table 1: Possible wastewater treatment approaches according to hierarchy of preferred approach

Strategy hierarchy`	Possible approaches
Reduce	<ul style="list-style-type: none"> • balance production of biosolids vs effluent • sewer rehabilitation to reduce inflow and infiltration • evaporation ponds in dry areas
Recycle	<ul style="list-style-type: none"> • reuse of low grade effluent • A+ effluent reuse for public greening • direct or indirect potable reuse • nutrient recovery • beneficial reuse of biosolids • new technologies for biosolid reuse
Release to land	<ul style="list-style-type: none"> • irrigation efficiencies • joint biosolids collection • biosolid drying/treatment technologies
Release to Waters & Offset	<ul style="list-style-type: none"> • Offsets to mitigate nutrients elsewhere
Release to Waters with best practice treatment	<ul style="list-style-type: none"> • Biological nutrient removal and other 'tertiary' treatment

Decision-making framework:

Develop a decision-making framework to support council assessment of STP upgrade options considering whole of life economic, environmental and social risks, costs and benefits. This framework will provide for the comparison of traditional and innovative approaches.

This framework will build upon the processes and learnings from the strategic assessment to develop a practical tool for use at a council and catchment wide level. The framework will be complemented by resources including factsheets, case studies and key contacts for further information.

Innovation trials:

Trials will be undertaken to test and provide demonstration sites of the innovative approaches at locations identified through the strategic assessment and in close collaboration with partners such as universities. A suite of innovations will be trialled in locations across a range of catchment typologies to test, monitor and evaluate the approaches within a pre-agreed framework. This may include approaches such as alternative nutrient management using algae, offsets, recycling wastewater and reuse of biosolids.

Community engagement will raise awareness through the trials and enhance understanding of the total water management cycle and the role each element plays - positive and negative.

Trial outcomes will be documented to formally contribute to collective scientific and practice knowledge in relation to wastewater treatment for improved water quality. The initiative coordinator and councils will work with DES to identify how successful outcomes can be used to update and support existing policies and regulatory requirements.

Innovation roll out:

A new annual wastewater management program will be sought to fund proven cost-effective methods to complement traditional approaches. The decision-making framework and information, demonstration sites and contacts for advice relating to practical considerations for the implementation of alternative measures will be available, informed by the innovation trials.

In years four of the MIP program, the first round will be funded to identified high priority STPs (identified through the strategic assessment) and is proposed to continue until year seven. Funding will be available to undertake option assessment and delivery stages on a 70/30 split. Funding will only be available to upgrade existing STPs.

Community engagement and awareness will continue to be an element. Building capacity with wastewater stewardship through knowledge sharing activities across councils will be ongoing and a requirement associated with accessing funding.

Reef Councils Major Integrated Project Proposal



Case Study – Working together to explore innovation

Reef catchment councils are already actively seeking innovations, tapping into research and industry expertise, and working together to benefit GBR health and share learnings across council boundaries in the management of wastewater. This is in response to aging WTP infrastructure with high operational costs, particularly in terms of energy, combined with the drive to improve water quality entering Reef catchments. This work is currently small scale and limited with funding restricted to councils allocating what they can afford from annual budget and through submissions for funding grants that align to expected outcomes. Below are a selection of these initiatives and their status.

Burdekin Shire Council

Burdekin Shire Council (BSC), in partnership with James Cook University (JCU) and MBD Energy Ltd has been trialling the use of macro algal treatment to remove nitrogen and phosphorus from wastewater streams. The trials have been very successful and promise effective removal of both nutrient pollutants at a capital and carbon cost of perhaps as little as 10% of those associated with current treatment technologies. In the case of the Ayr/Brandon Waste Water Treatment Plant, which might require a capital investment of \$30 million dollars to meet the current standard DEHP 5N/2P licences, a solution may be found for under \$2 million dollars, including initial operational expenses in fine-tuning the new technology over the first 2 years. BSC has to date been unsuccessful in securing funding to deliver the first full-scale permanent commercial implementation of the technology to provide proof of concept in the real world. When proven successful, the solution could be applied to most of the 129 similarly problematic plants not yet upgraded in the catchment area of the Great Barrier Reef. This represents at once a saving of over 90% (billions of dollars) on current treatment solutions and a chance to make large, measurable gains in reducing the impact of human society on the Reef environment.

Cairns Regional Council

In partnership with James Cook University and Itron Australasia, Cairns Regional Council (CRC) was successful in receiving funding under Round 1 of the Federal Government's Smart Cities and Suburbs program to deliver a connected network of 30 environmental sensors installed in urban waterways to obtain real-time water quality data on discharges entering the Great Barrier Reef Marine Park. The project will deliver functional tools for CRC to make evidence-based decisions using up-to-date environmental data (nutrients, sediments and flow). By establishing baseline indicators CRC will be able to measure the efficiency and effectiveness of the environmental programs as they are delivered.

In the STP space, CRC has been actively investigating potential options for the management of organic waste (including biosolids), partnering with industry to facilitate wastewater recycling and the use of macro algae for STPs.

Townsville City Council/Townsville Water (Townsville)

Townsville has also been trialling the use of smart technology for monitoring water quality and is currently investigating flow monitoring. They are also looking at using this technology to provide sewer and stormwater overflow alerts.

Like BSC, Townsville has undertaken a small-scale trial of macro-algae treatment at their Mt St Johns WWTP and are also in the process of developing a 15ML/day recycled water scheme from Cleveland Bay WWTP.

These initiatives demonstrate leading edge practice and innovative approaches and are being undertaken locally across individual councils. Trialling innovation and then rolling out to a full-scale trial / implementation is costly. If full scale trials prove as successful as research and small trials indicate, wide spread adoption of these new ways of doing things will deliver a range of benefits including cost savings (capital and annual operational costs), lower energy use, improved water quality and the potential for new income streams.

Industry Feedback

qldwater consolidated feedback



Feedback on Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill 2019

March 2019

The Queensland Water Directorate (**qldwater**) is the central advisory and advocacy body within Queensland's urban water sector representing the majority of the State's public Service Providers, from small local governments to major utilities including Queensland Urban Utilities and Unitywater. **qldwater** works with its members to provide safe, secure and sustainable urban water and sewerage services to Queensland communities.

qldwater collated information and input from urban water and sewerage service providers across the State and compiled this response for the [request for submissions](#) on the [Environmental Protection \(Great Barrier Reef Protection Measures\) and Other Legislation Amendment Bill 2019](#) that was introduced to Parliament on 27th February 2019 the Hon Leeanne Enoch MP, Minister for Environment and the Great Barrier Reef, Minister for Science and Minister for the Arts.

The sector is generally supportive of the need for new controls to protect the Great Barrier Reef (GBR) which is highly valued socially and economically. The proposed legislation is supported in principle as a reasonable initial step to improve water quality. However, the sector remains concerned about the misrepresentation of the impacts the legislation will have on public sewage management and GBR communities. There are 130 public sewage treatment plants (STPs) in the GBR catchments serving around 1 million people.

The new legislation creates additional costs for public STPs because of the requirement for 'no net decline' in Reef water quality standards from additional nutrient and sediment

loads. This means that new or expanded STPs will need to be designed to operate within current limits or seek water quality offsets. Any population growth in towns and cities in GBR catchments will thus incur additional expenses. The Decision RIS estimates this population growth at 16,522 people per year and estimates the additional cost to support this growth to be \$1.4 million per year (pp. 41-42). This figure is a gross underestimate because it is based on a number of incorrect assumptions as summarised in the table below:

Assumption (Decision RIS)	Error
"At the industry best practice release limit of 5 mg/l this results in 1 gram of residual nitrogen pollution per day" (p. 42)	There is no agreed standard for best practice and STP Environmental Authorities vary markedly often depending on community size and environmental risk. Achieving the stated release limit of 5 mg/l across all STPs in the GBR catchments would not be feasible.
"offset costs are still a sound indicator of the maximum possible costs that treatment plants might face when upgrading their treatment processes" (p. 41)	Offset costs are highly speculative (as recognised in the Decision RIS) and the figures used in the RIS analysis do not reflect the current Point Source Water Quality Offsets Policy (nor the draft new policy which has been in development for nearly two years).
"These are maximum costs because if plant operators can make the changes in a cheaper manner under the proposed regulations they will be able to do so" (p.41).	Offset costs do not reflect maximum costs because they are not always a practical solution. In fact, there have as yet been no successful STP offsets in reef catchments and upgrades have instead generally required expensive engineering solutions. As an example of potential maximum costs, it has been estimated that improving all STPs in GBR catchments to the "best practice" release limit of 5 mg/l of nitrogen, would have a capital cost in excess of \$700 mill with ongoing operational costs exceeding \$30 million per year.
"If changing their plant costs more than the offset amount, they will be able to choose to use offsets" (p. 41)	STP operators may not be free to choose offsets. The choice of appropriate response is negotiated with the environmental regulator which has the final say on the approach adopted. There has been only one example in Queensland where an offset has been used in place of (more expensive) approaches for STP improvements. The RIS is silent on how the current waste management hierarchy under the EPP Water will be treated and offsets are currently the final stage in this hierarchy meaning they can be used only as a last resort. The Decision RIS implies offsets can be a preferred management solution based solely on costs.

The real costs of the new framework will be greater than the value estimated in the RIS **and success is currently underpinned by an under-developed new approach to offsets.**

Critically, while the Decision RIS questions the growth rate of some industries in GBR catchments, it is clear that population will continue to grow and that additional loads at STPs will need to be accounted for immediately. This will require consideration of new or expanded STPs. Significant state funding contributions to water and sewerage infrastructure ceased several years ago meaning that in some places, there will be a backlog of underinvestment in STP upgrades.

The sector is prepared to invest in improved infrastructure particularly where benefits can be accrued to the GBR but only where this response is proportionate to risk. The initial RIS significantly overestimated the contribution of STPs which has been repeatedly estimated at

less than 9% to total catchment loads. The Decision RIS responds to this criticism by referring to unpublished data to claim that “nutrient pollutant loads from point sources could be higher proportionally than the contribution reported in the 2017 Scientific Consensus Statement.” Given the high degree of reliance on the Scientific Consensus statement elsewhere in the RIS, this is an extraordinary claim that needs further evidence and discussion.

Regardless, the sector is committed to continuous improvement of sewage management and discharges from public STPs and is currently working with the Office of the Great Barrier Reef to identify opportunities for greater use of offsets and for other innovative options. Initial work is being undertaken with state funding as part of a Major Integrated Project with the Local Government Association of Queensland. Further funding will be needed to trial and implement optimal solutions in GBR catchments, particularly in order to test and prove offsets and to explore innovative approaches where offsets are not achievable.

In summary, the sector agrees on the urgent need for:

- a) broad based regulation of nutrient, sediment and pesticide runoff entering GBR catchments,
- b) the imposition of end of catchment targets to better define environmental limits for overloaded catchments and
- c) responses that are proportionate to the risks to the GBR.

However, it is recommended:

- a) that there be targeted funding to continue the approach commenced with the Local Government Major Integrated Project to allow the sector and Queensland Government to continue to partner on innovative solutions (including offsets) to reducing the urban footprint and minimise future costs for reef communities, and
- b) that a workable offsets mechanism that reduces nutrient flows to the GBR and also considers social and economic impacts for reef communities is established **prior to the new regulatory framework being put in place.**